March 20, 2009

MINUTES

Engineering Design Review Panel

Informal fact finding conference conducted March 10, 2009 at 10:00 AM in the fifth floor conference room of the Madison Building

Property Location: 15205 Bowling Green Road, Windsor VA
Property Owner: Mike Edwards
Engineer: Don Williams, P.E.
Onsite Treatment System for 600 gpd

A design for a 600 gallon per day onsite treatment system was submitted to the Isle of Wight County Health Department on November 26, 2008, for review and approval (VDH ID# S093-08-0293).

The design utilized a Delta EC60CA (also referred to as an EcoPod 60) treatment works followed by a pump tank with LPD distribution. The LPD was housed in chambers with a 6 inch standoff to the seasonal high water table. Total available depth to the seasonal water table was 26 inches in a texture group II soil. Four trenches, each 50 ft by 2 ft, were provided for a total of 400 square feet trench bottom area.

The Isle of Wight County Health Department with concurrence from the VDH Review Engineer denied the submittal for (A) not complying with standard engineering practice and (B) not complying with performance requirements established by the Board of Health. The following detailed reasons were provided in VDH's letter dated January 12, 2009.

1. The proposal with limited supporting data does not justify the ECOPOD 60 beyond a secondary treatment level. Increasing the standoff distance to seasonal water table was recommended.
2. With regard to design flows, hydraulic loading rate, and site estimated percolation rate, the design footprint of 400 square feet creates a hydraulic loading rate for this site significantly higher than that which has been considered as standard engineering practice for units achieving comparable or better levels of effluent quality.

An Informal Fact Finding Conference (IFFC) was requested by the design engineer and the owner and held on March 10, 2009, at the VDH OEHS office in Richmond, VA. In attendance as members of the Engineering Design Review Panel were Chairman Marcia Degen, Ph.D. P.E. (DEQ); Joel Pinnix, P.E. (American Council of Engineering

Companies of Virginia); John Schofield, P.E. (VDH); and Rick Blackwell, P.E. (Virginia Society of Professional Engineers). Also in attendance was Ms. Ishneila Moore, Assistant Attorney General from the Office of the Attorney General acting as counsel for the Panel.

The Panel first requested that the engineer present his case as to why the design should be approved as submitted. Mr. Don Williams and Mr. Steve Haley spoke on behalf of the design. There were two main issues that were discussed: standoff to water table and loading rate.

First, the engineers addressed the suitability of the treatment unit for the 6 inch standoff to a seasonal high water table. The Delta EC60CA unit (also referred to as the Delta EcoPod elsewhere in this document and in the submittal) was evaluated through the NSF 40 testing protocol. The engineer felt that the data obtained from the NSF 40 testing were sufficient to determine that the Delta unit produced effluent of similar quality to treatment units that have been given reduced standoff to seasonal water tables and higher loading rates by VDH though GMPs such as 118A. The NSF data was not provided to the panel.

The second issue was the loading rate. The engineer conducted a series of tests to determine the actual onsite hydraulic conductivity of the soil. Based on the results of those tests and the above statements regarding the quality of the effluent, the engineer felt that the design submittal substantiated the higher loading rate of 1.5 gallons per day per square foot of trench bottom.

The engineer noted that if they had to raise the system in order to comply with the regulatory 12 inches to the seasonal water table, additional soil would have to be delivered to the site and mounded over the disposal area in order to create sufficient cover. The engineer report that the owner was familiar with the look of this mounded system at a neighboring property and was not in favor of having this on his site. The Panel questioned the engineer to ask why drip disposal was not considered. Use of drip disposal technology would have allowed the engineer to maximize the distance to the seasonal water table and also still avoid mounding over the site. The engineer did not respond directly to this question, but the discussion indicated that the engineer may not have been experienced with drip technology.

The Panel then requested VDH to present their reasons for denial. VDH first noted that another system has already been installed on the lot in question in the same footprint as the design under discussion. VDH explained that an earlier design had been approved (2006) and when VDH issued the denial for the design under discussion, the owner opted to install the earlier designed system. At this point, VDH did not believe they could issue a second permit for the site due to that recent installation in the same location.

The Panel noted that issue, but requested that VDH continue with a review of the reasons for their denial. First, the selected treatment unit, the Delta EC60CA was not

approved by VDH through a GMP as a treatment unit that would be allowed the shallower standoff to the seasonal water table. Second, VDH noted that the hydraulic conductivity tests were not run at the design installation depth and that the location of the test sites were along the sides of the disposal site and none were in the middle of the primary disposal/drainfield site. VDH did not feel that the data were sufficient to consider the higher loading rate.

The VDH review engineer concurred with the local VDH on the standoff to seasonal water table assessment and stated that there was insufficient documentation to consider the unit equivalent to the previously approved units. With regard to the loading rate issue, the VDH review engineer noted that while several of the Delta units were allowed a reduced footprint (higher loading rate) through a letter to the manufacturer, this unit was not listed. The VDH review engineer did propose a conditional approval of the loading rate based on the fact that there was sufficient area to extend the drainfield if there was an issue. The VDH review engineer offered this solution to the engineer on the condition that the depth to the seasonal high water table be increased to 12 inches to comply with the State's regulations. The engineer declined to pursue this option.

At this point, the Panel's Counsel suggested that the Panel go into close session to obtain legal counsel on potential issues with this case. The Panel went into closed session for approximately 30 minutes.

When the IFFC reconvened, the Panel Chairman presented the conclusions that had been reached.

1. The validity of this IFFC was questioned because of the system that has been installed on the same site as the proposed system. The Panel's counsel determined that the Panel should restrict itself to the evaluation of the design at hand and ignore the question of whether a VDH permit could be issued on this site. The Panel will issue its recommendations to VDH and VDH can then determine if a second permit can be issued or not.

2. The Panel restricted itself to consideration of the two issues at hand on this site. The first issue was the question of the standoff to the water table. The Panel was unanimous in stating that the engineering standard of practice is to maximize the distance to the seasonal water table to the extent practical on a given site. This site had a 26 inch soil depth to the seasonal water table. Use of an alternative dispersal technology such as drip would have allowed the system to go in easily and maintain the regulatory standoff to the water table.

The Panel was split on approval of the depth. Both the VDH and DEQ representatives felt that the site under consideration had plenty of depth to work with and that drip irrigation would have provided for maximum utilization of the site and would have resulted in a much higher protection of public health and environmental health. The two engineering representatives on the Panel agreed that the engineering standard

would be to maximize the distance to the seasonal water table, but accepted the use of the LPD system at 6 inches to the seasonal water table.

With regard to the loading rate, the Panel took into consideration several pieces of information. First, the engineer did conduct site specific tests to determine site specific hydraulic conductivity. While the Panel noted VDH's reservations regarding depth and location, the site appeared uniform enough based on the two soil evaluations provided (the previous design and the current design) that the location depth should not impact the results greatly. Second, the engineer provided a 3.6 fold factor of safety to arrive at the design rate. Third, the VDH letter approval to the Delta manufacturer, allowed a loading rate almost identical to the loading rate in this design. While it was understood that the EC60CA was not specifically listed in that letter, a smaller 500 gpd unit was listed and was considered essentially the same by the Panel. Fourth, the Panel also considered that the engineer did not use all of the primary disposal/drainfield site and had a reserve site so that if the loading rate was found to be excessive, there was area to expand the disposal/drainfield.

As a result, the Panel agreed that the engineer justified the loading rate that was used in the design.

The Panel reminded the attendees that the Panel cannot consider a design without a site and that any recommendations were site specific. If this site was to be considered for a permit by VDH, the Panel would have a **split** recommendation.

1. With regard to loading rate, the Panel agrees that the engineer has justified his loading rate for this site.

2. With regard to standoff to the seasonal water table, the Panel is split. The DEQ and VDH representatives would not allow a reduction in the distance to the seasonal water table for this site and would maintain the regulatory 12 inch standoff distance. The two private sector engineering representatives would allow the six inch standoff to the seasonal water table for this site.